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CORPORATE EDUCATION AND TRAINING

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EXECUTIVE SUMMARY

Research on education and training in industry has been fragmented and without uniformity. Data have been difficult to collect because corporations do not themselves know the answers to the questions being asked, and because information on corporate training and education is sometimes proprietary. Although it is not possible to accurately quantify the activity, we can identify certain characteristics of corporation involvement and the factors which influence it. Such information is important in understanding the implications of corporate education and training in the larger context of postsecondary education.

Corporate-based education and training serves the needs of several populations: youth and entry level workers, dislocated and retrained workers, and, of course, employees at all levels of management. It is overwhelmingly job-related and tied to employment. As a result of the diversity of target groups, corporate involvement touches on, or is central to, several areas of public policy: school to work transitions and youth employment; employment opportunities for women and minorities; productivity; re-training; skills imbalances in the work force; and postsecondary education needs and finances.

Most of what goes on in corporate programs is training: job-specific and company-specific--clearly the responsibility of the business. A smaller but growing sector of corporate activity overlaps the domain of postsecondary institutions and traditional higher education and adult education. These activities are also job-related but are more generally education or general skills development rather than specific skill training. Corporations are involved in such programs as providers, collaborators with traditional institutions, through company-sponsored tuition-aid programs and, in some cases, as competitors with colleges and universities.

The total expenditure for corporate-based education and training has been estimated at $30 billion annually. Employee participation in in-house courses has been estimated at 13%; 80-90% of corporations offer tuition-aid programs, but employee participation in tuition-aid programs ranges from 3-5%, a highly underutilized resource.

Several factors determine, and will continue to influence, what corporations do in education and training as well as how they will do it. First, the primary motivation is need--they will do what they think they need to do, no more and presumably no less. What they need will be influenced by a set of factors: demographic trends indicating fewer entry level workers and an aging workforce; technological change indicating new, different, and continuing re-training needs; the continued decline in the rate of productivity, and the relevance of human resource development to that issue; and finally what skills and abilities their employees bring with them.

How they meet their needs will be determined in part by what is available through traditional education institutions. Whether corporations increase their role as providers will depend upon the answers to two questions: First, do education and training pay off in efficiency, productivity, and profitability? and, second, is it cheaper to buy this service or do it themselves?

The context for this kind of decision-making is changing somewhat with the development of a human capital investment strategy in some corporations, which represents a broader concern for optimizing individual performance as well as organization performance.

Additionally, three trends in the postsecondary world may have some impact on the relative importance of the corporate sector in this area: first, the shift of students' concern toward more vocational needs, second, the increasing cost of attending colleges annd universities, and third, the reduction in availability of student financial aid.

The convergence of increased corporate involvement in education and training and changing student needs has some implications for planners of postsecondary education. This convergence may influence individual decisions about postsecondary education, altering the pattern of schooling and the locus of education for some, perhaps many. For traditional institutions, the potential market represented

by corporation contracts and joint ventures may be increasingly attractive as financial pressures increase. This may encourage institutional changes to enable collaboration to occur along with all that may imply for curriculum, financing procedures, scheduling, and faculty issues.

The importance of these implications argues for a more complete knowledge and better understanding of this sector of postsecondary education than is now available.

Corporate-Based Education and Training

In order to address the broad issues of the future of postsecondary education, including those questions related to student financial assistance, it is necessary to understand the nature and extent of activities overlapping functions, as well as interaction among them. While a considerable literature already exists about the first sector--colleges and universities--and about for-profit institutions (the second sector), much less is known about the third sector of postsecondary education--education and training provided as an adjunct to noninstructional activities of such institutions as corporations, unions, museums, the military services, and government.

The purpose of this paper is to describe what is known about education and training in one part of this third sector--in industry. It will briefly describe the history of corporate based education and training; it will describe what is known about the characteristics of education and training in the corporate world and the roles corporations have developed as providers of education and as collaborators, competitors, and supporters of traditional institutions; it will indicate those internal and external factors which determine what corporations do and might do in regard to this function in the future. The paper will specify those information gaps which currently exist about this sector of postsecondary education; finally, it will consider how public policy may influence education in industry.

History of Education and Training in Industry

Probably the earliest form of industry training is apprenticeship,

dating as far back as the Code of Hammurabi some 4,000 years ago.[1] Developed in medieval craft guilds, apprenticeships were supplemented in America in the 1800's with factory schools, developed to meet the rapidly growing need for skilled workers. The late 1800's and early 1900's witnessed the proliferation of such schools among businesses such as Western Electric, Goodyear, Ford, and National Cash Register--companies responsible for the development of the new technologies of that time.[2] During World War I, companies had an increased need for management skills and they established links with colleges and universities to provide programs for their employees. There was little need for industrial training during the Great Depression, but the war years that followed with greatly expanded and more complex industrial activity created a new demand for industry based education and training. The emergence of new industries in the post-war period of the 1950's and early '60's similarly created new training and retraining demands. The '60's and '70's created additional demands with changes in the profile of America's industrial base--more service industries and fewer manufacturing industries, as well as changes in the work force brought about by changes in social values in society, the entrance of women into the work force, affirmative action programs, and the large numbers of youth seeking employment. Corporations responding to these needs began developing human resource development strategies--going beyond the traditional job-specific training which characterized most programs, to providing a spectrum of training ranging from remedial skills courses to top level management development. Human Resource Development is a more comprehensive strategy for human capital formation and is concerned with overall competence of the work force. The goal is improving organizational as well as individual perform-

ance, and skills development is viewed as a continuous process.[3]

Corporate-Based Education and Training Today

A variety of data sources exist today which can assist in compiling a snapshot view of current corporate education and training. Certain caveats must be issued, however, in using this data for such a purpose. Some of the sources are old and the information they provide is clearly out-dated; further, each of the sources represents some select portion of the corporate sector and it is unwise to generalize, for example, from one industrial sector to another, or from large corporations to small corporations. Finally, definitions of education and training differ from one data source to another and, for example, the inclusion or exclusion of on-the-job training can make a difference of a factor of two or more in numbers of students. With these forewarnings, certain general statements can be made, and it is useful to do so.

A synthesis of existing data (see APPENDIX) done by Goldstein[4] offers the following information:

° Formal training is done by less than one half of all business firms, but is conducted by more than eight out of ten large firms (i.e., firms of over 500 employees).

° The number of workers involved in training, broadly defined, is one out of five in large companies; fewer than that across all firms.

° Training is mostly given in company-sponsored courses during working hours.

° Most training is directed toward skill development.

° Much skill development training is targeted at management and

other white collar workers.

° Blue collar workers get a disproportionately small share of formal training (Much blue collar training is specific skill-on-the-job training and thus not included in most data sources.)

With regard to expenditures, the American Society for Training and Development (ASTD) estimates that $30-40 billion is spent annually by industry for education and training. This figure is approximately equal to the amount being spent in public postsecondary institution. The ASTD figure includes:

> expenditures for in-house (employer-provided) education and training--instructors' salaries; hardware and software; training facilities; research, design, planning, administration, and evaluation of the training/development function; tuition assistance for employees; seminars and workshops; consultant services, related travel and living expenses; correspondence courses and other forms of self-study media, plus indirect cost of overhead allocation. It does not include the costs of wages and salaries of those being trained.[5]

In the context of postsecondary education overall, the corporate sector has a very large enrollment; it is estimated that 11 million 'learners' are in traditional postsecondary education institutions, and 53 million are described as 'work period' learners, that is, individuals involved in work-related deliberate learning experiences[6]

Another way of assessing enrollment is to view corporate programs in the context of adult education. Business and industry, according to NCES data for 1978, offered 11% of all adult education courses offered, and the largest portion of those courses offered by employers (42.1%). (See Table 1)

Table 1

Courses in Adult Education, By Type of Provider of Instruction
Year Ending May 1978

	Number of Courses (thousands)	Percentage Distribution
Provider of instruction		
School	16,554	57.3
Elementary, junior, or high school	2,725	9.4
Two-year college or vocational-technical institute	5,321	18.4
Four-year college or university	5,666	19.6
Vocational, trade, or business school	1,933	6.7
Other school	909	3.1
Business or industry	3,165	11.0
Labor organization or professional organization	1,086	3.8
Government agency	2,445	8.5
Private community organization	2,394	8.3
Tutor or private instructor	1,336	4.6
Other	1,268	4.4
Did not know	100	0.3
Not reported	544	1.9
Total	28,894	100.0
Employer-provided instruction for employees		
School	1,146	24.2
Business or industry	1,998	42.1
Labor organization or professional association		
Government agency	985	20.8
Private communiiity organization	116	2.4
Other	283	6.0
Total	4,741	100.0

Note: Details may not add to totals because of rounding.
Source: U.S. Department of Education, National Center for Education Statistics, THE CONDITION OF EDUCATION, 1981, p. 24.

These generalizations define the scope and magnitude of corporate education and training. In addition, however, other characteristics may be identified from existing data which may not yet be accurately quantified, but provide a

more detailed picture of the nature and motivation for corporate training.

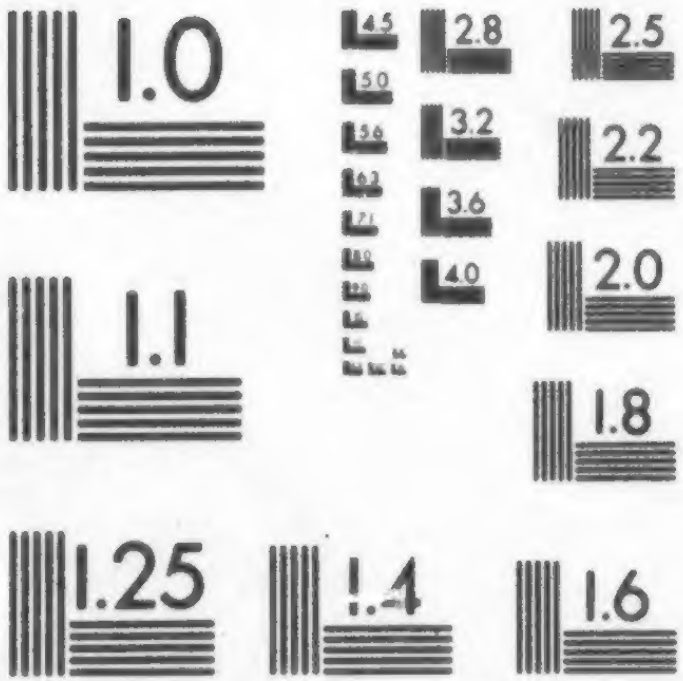
Characteristics

First, corporation education and training is based on need--industry does what it feels it must do--not more and presumably not less. As a result, it is functional and mission-oriented. Courses and programs are built on needs assessment. Company needs are defined by both internal and external factors: internally by the specific requirements of the job to be done and the company setting; externally by the skills employees come equipped with and the external resources available to help meet employers' needs. The latter is particularly relevant in fields with rapidly changing technologies--often industry is on the cutting edge of knowledge development and must themselves provide the education and training required. The Wang Institute is a good example of such a situation; when Wang Corporation could identify only three university programs offering masters-level degrees in computer softwear development, they developed their own degree-granting program.

An important external factor in deciding what companies will provide for their employees is whether traditional education institutions can be flexible in the way they deliver courses and design programs. Often industry's needs include practical, inter-disciplinary approaches to substantive areas with flexible hours and scheduling.

The substance of corporate training courses is also an important issue. Most training is done in the area of specific skills development. Industry programs often include the following:

- sales training
- safety training
- management training



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

- clerical and secretarial skills
- advanced skills

These offerings are job-related and typically company-specific. They are cearly primarily the responsibility of business. Other programs clearly overlap the offerings of traditional schools and universities. For example, industry provides its own basic/remedial education when the entry level skills of new employees are inadequate; it provides postsecondary level programs when such offerings are unavailable or inadequate to meet their needs, either in substance or delivery. Also, 80-90% of companies offer tuition-aid to employees for courses taken at colleges and universities. Most often they require them to be job-related.

The organization of corporate-based programs is diverse--it is often determined by the size of the company and the nature of the business. Management training for first level supervision and middle management in large corporations (1,000 or more employees) as well as job-specific training is largely done in-house.[7] Many corporations offer courses during company hours; others offer courses after work. Some large corporations (for example, IBM, Xerox, Uniroyal) have highly centralized education and training programs. They operate full-service residential corporate education centers. Others have highly decentralized education and training programs with decisions made and delivery done at the plant level.

The teachers used are as varied as the courses themselves. Some companies companies use full-time company instructors; some use personnel department employees on a part-time basis. Production employees are typically trained by foremen and supervisors. Corporations surveyed by the Conference Board[8] also reported using consultants, training specialists, vocational, technical and business teachers and university professors.

Collaborative Programs

While most corporate education and training is done in-house, some companies have turned to local two- and four-year colleges to provide specialized courses for their employees. The American Council on Education has just completed a survey of 250 education institutions asking whether and what kind of collaborative programs or joint ventures they have with industry.[9] The results of 188 institutions indicate a range of programs being offered at both public and private institutions. Thirty-one percent of responses indicated they had programs dealing with education and training of employees; 32% indicated their institutions used the facilities of corporations either to hold classes or utilize computers or laboratories; 18% indicated their instructors were beig utilized in corporate education and training programs; 12% indicated they had cooperative programs and/or internships; and 6% of responses focused on research and development programs. In terms of subject matter in these programs, the most frequently identified area was management training and development; the next most frequently identified focus was degree programs with courses taught at the work-site; also identified, in rank order, were career transition programs, health science programs (for example, radiology, precision optics, nursing) and energy-related courses taught on-site.

One striking finding is that more programs of this kind have developed since 1981 than did in the total five years preceding 1981. These arrangements can make better use of resources and facilities, but, if they are to have staying power, important issues must be settled. Ernest Lynton, in a paper for the American Association for Higher Education, identified some of these issues. Often industry requires multi-disciplinary courses which are sometimes difficult for colleges to orchestrate. Collaborative programs require curricula that encourage the transition from theory to practice, and

often the traditional institutions are too traditional in their approaches. In addition, industry requires flexibility in delivery systems--courses taught at odd hours, or on-site, to fit into work schedules and career development patterns.[10]

Finally, major questions about academic autonomy, industry-developed curricula, and the appropriateness of non-credit offerings arise.[11]

Examples of creative programs involving such collaboration follow:[12]

1. The Participants:

   Mary College - A Catholic liberal arts institution which is located near Bismarck, North Dakota, and has an enrollment of approximatley 980 students.

   Energy Companies - Montana Dakota Utilities Company, North American Coal Corporation, Basin Electric Power Cooperative, North Dakota Association of Rural Electric Cooperatives, and the North Dakota Office of Energy Management and Conservation.

   The Venture:

   This venture not only represents a traditional liberal arts college exploring some technical alternatives, but it also servs as an interesting cooperative effort among the energy-related corporations in the area. The program is designed to meet the needs of the rapidly growing industry in the North Dakota region.

   The Area of Emphasis in Energy Management requires 24 hours of specific energy-related courses in addition to the course work for the Business Administration degree. Course offerings have included such things as "Energy Economics", "Energy: Government Regulations and Public Concerns", and "Research". One of the strengths of the program is the opportunity for students to gain practical experience through paid internship placements each summer during their academic programs.

2. Partners in Progress

   The Participants:

   Bethune-Cookman College - A private liberal arts college in Daytona Beach, Florida, with a predominantly minority student enrollment of 1,747 students.

   Area Businesses - Numerous private and governmental agencies in the Daytona Beach area including American Can, Honeywell, General Electric, IBM, the Chamber of Commerce, and the Kennedy Space Center.

The Venture:

The goal of Partners in Progress was to establish closer ties with the local business community by providing services to that group which would better acquaint them with the capabilities of Bethune-Cookman College and its students. To achieve that goal, a four-part plan was implemented:

1. Symposia - a program in which national experts and consultants were invited by the institution to provide specialized sessions in areas such as human resource management for the local business community.

2. Seminars and Training - specific programs presented by the campus faculty in response to needs indicated by local businesses in areas like inventory control, salesmanship, business math, or production control.

3. Special Studies - analyses and surveys conducted by Bethune-Cookman faculty and students on various business issues for area businesses.

4. Job Bank - designed to provide a pool of well-qualified students for part-time and full-time positions, with an emphasis on career-related work experience, in the Daytona Beach area.

3. The Participants:

Evergreen Valley College - A community college located in San Jose, California, with a student enrollment of approximately 6,800.

Lockheed, Memorex, IBM, Hewlett-Packard, and others - Area companies which have been supportive of this venture in such ways as release time for certain employees serving as instructors and the use of plant facilities for class tours.

The Venture:

This 10-week program, begun in 1980, was designed to provide individuals with a realistic view of the career possibilities within the field of electronics. The participants, primarily displaced homemakers, were given the opportunity to explore the areas of computer technology, drafting, and electrical applications. Job tasks, actual working conditions, and opportunities for career advancement were examined through classroom lectures and laboratory exercises at the Evergreen campus and supplemented by the plant tours.

Competitive Programs or Programs in Areas Overlapping With Traditional Education Institutions

There are two areas in which corporate education and training overlap programs in traditional education institutions. These are basic skills edu-

most courses offered by industry still carry no formal academic credit, colleges and universities are under some pressure to accept such courses as credit toward degrees. The Program on Non-Collegiate Sponsored Instruction of the American Council on Education has identified 2,000 courses at 152 corporations that it recommends as suitable for credit. The New York State Board of Regents supports this effort. The Regents' external degree program awards credit for such approved courses.

Tuition Aid Programs

Tuition aid programs have been a focus of study of the National Institute for Work and Learning (NIWL). "A tuition aid plan is any formal arrangement through which a company offers assistance to its employees for educational pursuits."[14]

Some plans are employer-initiated, some are negotiated by unions through collective bargaining. A study by NIWL in 1976-77 revealed four categories of tuition assistance: tuition reimbursement or advancement plans; education leave and leave of absence plans; scholarships and education loans; and training funds. A very high percentage (80-90%) of large firms offers tuition assistance.[15] These plans represent a financial commitment of two to five billion dollars annually.[16] However, only three to five percent of eligible employees participate.

Low utilization of tuition-aid programs has been examined[17], and certain structural, psychological, and informational barriers have been identified. Time money, and access appear to be the key structural barriers. Programs which provide tuition advances, flexible work hours, and have access to on-site or close-to-work course locations are more successful. More successful programs (Polaroid, Kimberly-Clark, for example) require little or no advance payment from employees.

Another factor which is associated with utilization of tuition-aid programs is the requirement that courses be job-related. NIWL found greater use when flexible criteria were used by employers.[18]

The benefits to employers from tuition-aid programs include increased employee skills, reduced turnover, and increased employee loyalty. Traditional institutions gain not only from the new market associated with employment-related courses taken under tuition-aid programs, but there is some evidence that such students often make continuing commitments to higher education. Thus, the individual and the public benefit as well from this relationship between corporation and the college or university.

An incentive to employee participation was the passage of the Employer Educational Assistance provisions of the 1978 Revenue Act. The provisions exclude most employer education assistance from employee income tax. The 1978 statutes will expire at the end of 1983. Legislation has been introduced to permanently extend the provisions.

FACTORS WHICH WILL INFLUENCE FUTURE CORPORATE DECISIONS REGARDING EDUCATION AND TRAINING

Productivity

Productivity as a measure of efficiency takes on much greater significance in a highly competitive world market when companies are operating on a narrow profit margin. This heightened concern for productivity has implications for the education and training functions in corporations. A theoretical base exists for the relationship between education and productivity[19]

and corporations have developed policies which follow from this relationship. Once we go beyond the area of specific skill-on-the-job training, however, there is no solid data which ties education and training to output per person hour. In the semi-conductor industry, some companies are attempting to reduce employee turnover and increase employee commitment through development programs. Intel, Rolm, Four Phase, and Tandem are reported to have made such human resource development investments to "ensure maximum productivity on the job and rapid career advancement".[20] Exxon Corporation's administrative services department uses a cross-training technique which allows employees to cover for absent personnel and adds to the diversity of individuals' jobs.

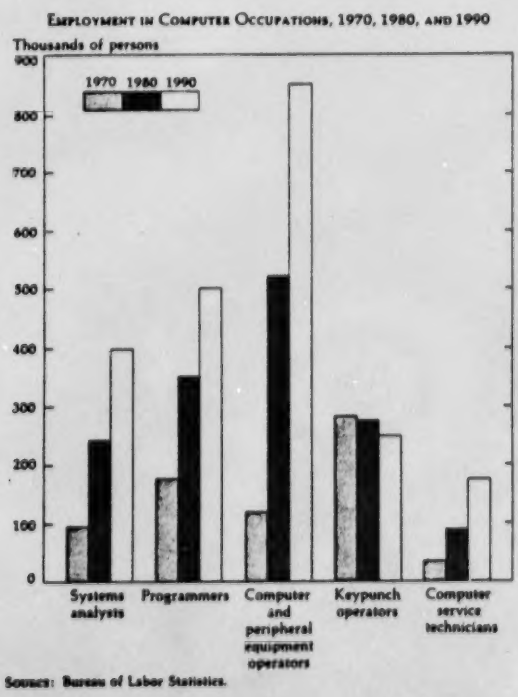
Demographics

A second factor which will have an effect on the level of education and training done in industry is the changing demographics of the work force. Declines in the birthrate (baby boomers are now in their 30's) mean a slower growth rate in the size of the youth cohort, 16-25 year olds, by the 1990's. This has certain implications for the education and training functions of corporations. First, it will mean that industry will have to dip down into the pool of potential young employees and hire more than the "cream." Unless dramatic changes take place in the public school systems, corporations will find themselves doing even more basic/remedial training. Additionally, the gradual aging of the work force means multiple re-training needs for each employee as industry's needs change. This brings us to a third factor which has a significant impact on corporate education and training activities.

Technology

The rapid and extensive changes occurring in technology affect a very broad base of America's industry. These technological changes drastically change the requirements for participation in the work force. Some examples drawn together by Choate and Epstein illustrate the dramatic changes already underway. Peter Drucker forecasts the loss of 10-15 million manufacturing jobs requiring more and different training. The American Electronics Association predicts the creation of 140,000 paraprofessional and 113,000 professional positions by 1985. The shortage of machinists predicted by the National Tooling and Machine A ~~ciation is estimated at about a quarter of a million by 1985. The introduction of robots into American industry will create the need for a trained cadre of workers to operate and maintain them.[21] In the computer field, Bureau of Laobr Statistics data predict increasing demands for computer operators, programmers and sytems analysts, while education and training in the schools lags behind creating a widening gap between education and work (See Figure 1). Corporations' needs in these areas will determine what they do.

Figure 1



Another factor which influences what corporations do in education and training is the quality and relevance of education in pre-collegiate and other postsecondary programs. As stated earlier, there is no evidence to suggest that corporations do more than they feel they have to do. A comment on corporate education as potential competitors with other sectors of postsecondary education may be appropriate here.

What corporations offer, from job-specific skills training to graduate level accredited courses in technical, substantive fields, is mission-oriented and designed to meet their needs, i.e., need-specific and therefore not exactly comparable to offerings in other institutions. This does not mean, however, that students might not see it as a viable if not preferable alternative to traditional education, especially when it comes tuition-free and is associated with a steady-paying job, often with the opportunity for advancement. Students appear to have become more vocationally oriented over the last several years, and this scenario is not unknown, even now.

Information Gaps

Information is lacking in many areas. Thus, for example, little is known about training and education in small businesses. Yet, it is estimated that 60-80% of new jobs created are in this sector; how will they meet their training needs?

We do not understand how education and training decisions are made in corporations. We need to be able to assess the employment and education outcomes of corporate programs, but the status of evaluation of training in industry is minimal. Because it is expensive and difficult, many corporations do little informal evaluation and use no formal techniques.[22]

And finally, we need to understand the impact of public policy on the interaction in postsecondary education among all three sectors. As corporate

sector involvement in education increases and becomes more competitive with traditional institutions, there is the potential of reducing pressure for student financial aid. Similarly, increased use of corporate tuition aid programs can reduce pressures on student financial assistance.

Public policy makers should seek ways to leverage the considerable resources of the corporate sector in postsecondary education with public funds in support of education with high public utility. The definition of "public utility" is, of course, a subject for debate.

Finally, public policy can influence how corporations are involved in education and training. For example, while most training is done voluntarily, some programs, such as safety training, are mandated. Also, public policy may influence who is the target of education and training in corporations. The availability of public funds for on-the-job training is an example of this. Similarly, public policy may influence how education and training is delivered and what interaction exists among the sectors in postsecondary education, including the corporate sector. Tax incentives for human resource development training would support an increased role for corporations as providers; publicly supported community colleges with career development programs subsidize corporate education and training through traditional institutions and encourage collaborative ventures.

Conclusion

The foregoing has described the involvement of corporations in education and training as part of the larger domain of postsecondary education. It has illustrated the various roles corporations may play as providers (through in-house education programs), collaborators (with traditional education institutions), as competitors (through degree-granting programs and the development

of training subsidiaries) and as supporters through tuition-aid programs. As indicated, much of the data is incomplete. Additionally, proprietary concerns often make detailed data gathering impossible. Even when this is not the case, most corporations treat education and training as a cost of production and do not themselves know what they are spending.

There is, however, general agreement that this sector of postsecondary education is growing. The significance of its growth may be amplified by three notable trends in the postsecondary world: first, the shift of students' concerns toward more vocational needs; second, the increasing cost of attending colleges and universities; and third, the reduction in availability of student financial aid.

The convergence of increased corporate involvement in education and training and changing student needs has some implications for planners of postsecondary education. This convergence may influence individual decisions about postsecondary education, altering the pattern of schooling and the locus of education for some, perhaps many. For traditional institutions, the potential market represented by corporation contracts and joint ventures may be increasingly attractive as financial pressures increase. This may encourage institutional changes to enable collaboration to occur along with all that may imply for curriculum, financing procedures, scheduling, and faculty issues.

The importance of these implications argues for a more complete knowledge and better understanding of this sector of postsecondary education than is now available.

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APPENDIX

SUMMARY OF SOME PRINCIPAL STUDIES ON CORPORATE EDUCATION AND TRAINING

Each of the studies below represents and important contribution to what is known about corporate education and training. Unfortunately, no comprehensive survey has yet been done, and it is not possible to mesh the sets of data available as they are not comparable in definitions, variables, samples, etc.

1. Lusterman, Seymour. Education in Industry. New York: The Conference Board, 1977.

   - Sample included only large companies - 500 or more employees.
   - Information is based on a 27% response rate representing 610 companies.
   - On-the-job training was not included.
   - No data on small businesses.
   - Findings indicate: of the respondents, 89% had tuition aid programs;
     70% offered company courses during working hours;
     39% had after work company courses;
     74% offered outside courses during working hours.
   - 96% of the large firms had more in-house/during work hours courses.
   - One out of five employees was participating in available corporate education and training.
   - Finance companies had the highest participation rate: 20%.
   - Manufacturing companies had the lowest participation rate: 7%.

2. U.S. Department of Labor, Bureau of Apprenticeship and Training, Training of Workers in American Industry, 1962. Washington, D.C.: 1965.

   - Looked at formal classroom training only; no data for on-the-job training.
   - One out of five firms reported formal training; 7% of workers eligible were enrolled.

3. U.S. Department of Labor, Bureau of Labor Statistics and Employment and Training Administration, Occupational Training in Selected Metal-Working Industries, BLS Bulletin 1976, FTA R&D Monograph 53, 1977.

   - Focused on structured skill training.
   - 71% of training was to qualify workers for employment, 29% for skill improvement.
   - On-the-job training was most common.
   - Ten percent of the total number employed had been trained.

4. Bureau of National Affairs, Inc., PDF Survey No. 116, Management Training Development Programs. Washington, D.C.: 1977.

   - Data collected from 75 large companies (1000 employees or more), 39 small companies.
   - Types of training available: in-house most common for first-level supervisors (75%); professional trade association meetings (96%) and outside seminars (89%) were most commonly used for middle management.
   - 47% of firms surveyed had decentralized programs.
   - 18% did all training and education in one location.
   - Cost range reported per person: supervisors: $20-$585
     middlemanagement: $20-$1000

5. Human Resources Department, AT&T, Corporate Tuition Aid Plans, 1977: Report on a Survey of Outside Companies and Bell System Companies, 1977.

   - Surveyed 100 of the Fortune 500 and twenty-three Bell System companies.
   - 93% of the companies had tuition aid programs.
   - 83% do not pay for courses which are not job-related and/or do not lead to a degree.
   - 62% of participants are non-management.
   - 27% of participants were lower management.
   - A decline in the use of tuition aid programs was noted from 5.3% in 1972 to 3% in 1978.

6. Abramovitz, Mimi. Where are the Women?: A Study of Worker Utilization of Tuition Refund Plans. Cornell University, 1977.

   Study focused on the use of tuition aid programs as a part of affirmative action programs. It identified two major structural barriers to utilization: 1) the restriction to job-related courses; 2) the use of reimbursement process as opposed to payment in advance.

7. O'Neill, Joseph P. College Financial Aid and the Employee Tuition Benefit Programs of the Fortune 500. New Jersey: Conference University Press, 1981.

   - Raw data available from 361 companies - no tabulations.
   - Responses to Educational Benefit Program questionnaire.

8. The Condition of Education, 1981. Washington, D.C.: National Center for Education Statistics, 1981.

   The adult education statistics included in this report are from the 1978 Tri-Annual Report on Participation in Adult Education which is included in Condition of Education, 1981. Additionally, early reports were released in July 1982 on the 1981 Report on Participation in Adult Education. Time did not permit an analysis of changes between 1978 and 1981 with one exception: in 1978 employers were identified as providing approximately 24% of adult education; in 1981 that figure rose to approximately 33%, a substantial gain in employer-provided education.